

Claims:

We claim:

1 1. A surgical instrument for urging a longitudinal spinal member into a top-
2 loading spinal implant, the instrument comprising:
3 a holder assembly;
4 a release assembly; and
5 an actuating member operatively associated with the holder assembly and the release
6 assembly so that actuation of the actuating member moves the holder assembly with respect
7 to the release assembly;
8 wherein the release assembly comprises a tubular member and a pusher member, the
9 tubular member is sized and configured to be slidably disposed within the holder assembly,
10 and the pusher member is sized and configured to slidably surround at least a portion of the
11 holder assembly.

1 2. The instrument of claim 1, wherein the holder assembly includes a proximal
2 end and a distal end, the distal end including a pair of fingers for engaging the spinal implant,
3 and the pusher member includes a recess for engaging the longitudinal spinal member so that
4 movement of the holder assembly with respect to the release assembly urges the spinal
5 member into engagement with the spinal implant.

1 3. The instrument of claim 2, the fingers having a first position in which the
2 spinal implant is freely received therebetween, and a second position in which the fingers
3 contact an underside of an edge of the spinal implant to retain the implant in at least a first
4 axial direction, wherein the fingers are adjustably moveable from the first position to the
5 second position.

1 4. The instrument of claim 2, wherein the distal end of the holder assembly
2 further includes a pair of U-shaped recesses configured to correspond with the recess formed
3 in the pusher member so that the spinal rod may extend completely through the holder
4 assembly and the pusher member.

1 5. The instrument of claim 2, wherein the actuating member is moveable
2 between a rest position and an actuated position, the fingers being biased apart in the rest
3 position and are sized and configured to contact an underside of an edge of the spinal implant
4 in the actuated position.

1 6. The instrument of claim 2, wherein the pusher member has an interior surface
2 and the fingers have an exterior surface configured to engage the interior surface of the
3 pusher member so that movement of the holder assembly with respect to the release assembly
4 moves the fingers from a first position in which the fingers are separated by a first separation
5 distance to a second position in which the fingers are separated by a second separation
6 distance, the second separation distance being less than the first separation distance.

1 7. The instrument of claim 6, wherein the fingers are sized and configured so that
2 when in the second position, the fingers engage an underside of an edge of the spinal implant.

1 8. The instrument of claim 1, wherein the distal end of the tubular member
2 includes at least one hole and the pusher member includes at least one aperture, the at least
3 one hole and the at least one aperture being sized and configured to receive at least one pin
4 for securing the pusher member to the tubular member.

1 9. The instrument of claim 1, wherein the pusher member includes a proximal
2 section and a distal section disposed along a longitudinal axis of the pusher member, the
3 member having an opening sized and configured to receive the holder assembly coaxially
4 therein.

1 10. The instrument of claim 1, wherein the tubular member further includes a
2 central bore extending from a proximal end to a distal end of the member, the central bore
3 being sized and configured to receive a fastener.

1 11. The instrument of claim 1, wherein the proximal end of the holder assembly
2 includes at least one slot sized and configured to receive a portion of the actuating member.

1 12. The instrument of claim 11, wherein the tubular member further includes a
2 proximal end and a distal end, the proximal end of the tubular member including a first pair
3 of slots sized and configured to receive a portion of the actuating member.

1 13. The instrument of claim 12, wherein the proximal end of the tubular member
2 further includes a second pair of slots sized and configured to correspond with the slots
3 formed on the holder assembly when the release assembly is inserted into the holder
4 assembly.

1 14. The instrument of claim 12, wherein the actuating member further includes a
2 first tip and a second tip each sized and configured to snap onto and engage the slots formed
3 in the holder and release assemblies, respectively.

1 15. The instrument of claim 1, wherein the tubular member includes a proximal
2 end and a distal end, the proximal end of the tubular member includes a slot sized and
3 configured to mate with a pin in the proximal end of the holder assembly to facilitate proper
4 alignment of the tubular member within the holder assembly.

1 16. The instrument of claim 1, wherein the actuating member is a hand grip, the
2 hand grip having a first grip member, a second grip member, a first jaw member, and a
3 second jaw member, the first grip member pivotally coupled to the second grip member, and
4 the first and second jaw members are operatively associated with the holder and release
5 assemblies, respectively.

1 17. The instrument of claim 16, wherein the first grip member is pivotally coupled
2 to the first jaw member and the second grip member is pivotally coupled to the second jaw
3 member.

1 18. The instrument of claim 17, wherein the first grip member further includes a
2 pin slidably movable in a slot formed in the second jaw member and the second grip member
3 includes a pin slidably movable in a slot formed in the first jaw member to maintain the jaw
4 members in parallel alignment when the instrument is actuated.

1 19. The instrument of claim 18, wherein the first and second jaw members further
2 include a tip sized and configured to snap onto and engage corresponding slots formed in the
3 holder and release assemblies.

1 20. The instrument of claim 19, wherein when the hand grip snaps onto the holder
2 and release assemblies, the hand grip is orientated substantially perpendicular to the
3 longitudinal axes of the holder and release assemblies.

1 21. The instrument of claim 1, wherein the longitudinal spinal member is a
2 longitudinal spinal rod and the spinal implant comprises:
3 a body having a channel for receiving the spinal rod;
4 an anchor member associated with the body, and
5 a fastener for securing the spinal rod to the body and for fixing the angular position of
6 the anchor member with respect to the body.

1 22. The instrument of claim 21, wherein the body is a generally cylindrical
2 member having an upper portion incorporating the channel, and a lower portion defining a
3 recess, the anchor member further including a curvate head that is shaped and dimensioned to
4 fit within the recess for facilitating polyaxial movement of the body with respect to the
5 anchor member.

1 23. The instrument of claim 22, wherein the lower portion of the body
2 surrounding the recess is at least partially compressible to allow the body to be snapped over
3 the curvate head.

1 24. The instrument of claim 23, wherein the spinal implant further includes a
2 collar slidably disposed around the lower portion of the body, the collar having an inner
3 surface that interacts with an exterior surface of the lower portion of the body to compress the
4 recess around the curvate head when the collar is pressed downward with respect to the body.

1 25. The instrument of claim 24, wherein the fastener is a set screw sized and
2 configured to engage internal threads formed on an inside surface of the upper portion of the
3 body member such that tightening the fastener onto the body moves the fastener against the
4 spinal rod when the rod is located in the channel and urges the spinal rod against the collar
5 causing the collar to move downward along the exterior surface of the lower portion of the
6 body thereby contracting the recess around the curvate head of the anchor member, locking
7 the angular position of the anchor member with respect to the body.

1 26. The instrument of claim 25, wherein the holder assembly includes a pair of
2 fingers at a distal end thereof, the fingers being sized and configured to allow an axial upward
3 force to be applied to the locking collar.

1 27. A surgical instrument for urging a longitudinal spinal member into a top-
2 loading spinal implant, the instrument comprising:
3 a holder assembly having a pair of fingers each including an inward pointing ledge
4 which project radially inwards from an end of the respective finger, the ledge being sized and
5 configured to contact an underside of an edge of the spinal implant;

6 a release assembly; and

7 an actuating member wherein the actuating member engages a portion of the holder
8 assembly and a portion of the release assembly so that actuation of the actuating member
9 moves the holder assembly with respect to the release assembly and compresses the fingers
10 from a first position to a second position so that fingers contact the underside of the edge of
11 the spinal implant.

1 28. The instrument of claim 27, wherein the release assembly includes a recess for
2 engaging the longitudinal spinal member so that movement of the holder assembly with
3 respect to the release assembly urges the spinal member into engagement with the spinal
4 implant.

1 29. The instrument of claim 28, wherein the holder assembly further includes a
2 pair of U-shaped recesses configured to correspond with the recess formed in the release
3 assembly so that the spinal rod may extend completely through the holder assembly and the
4 release assembly.

1 30. The instrument of claim 28, wherein the release assembly comprises a tubular
2 member and a pusher member, the tubular member being sized and configured to be slidably
3 disposed within the holder assembly, and the pusher member being sized and configured to
4 slidably surround at least a portion of the fingers.

1 31. The instrument of claim 30, wherein the pusher member has an interior
2 surface and the fingers have an exterior surface configured to engage the interior surface of
3 the pusher member so that movement of the holder assembly with respect to the release
4 assembly compresses the fingers from a first separation distance when in the first position to
5 a second separation distance when in the second position, the second separation distance
6 being less than the first separation distance.

1 32. The instrument of claim 30, wherein the pusher member includes a proximal
2 section and a distal section disposed along a longitudinal axis of the pusher member, the
3 member having an opening sized and configured to receive the holder assembly coaxially
4 therein.

1 33. The instrument of claim 30, wherein the distal end of the tubular member
2 includes at least one hole and the pusher member includes at least one aperture, the at least
3 one hole and the at least one aperture being sized and configured to receive at least one pin
4 for securing the pusher member to the tubular member.

1 34. The instrument of claim 27, wherein the release assembly further includes a
2 central bore extending from a proximal end to a distal end of the member, the central bore
3 being sized and configured to receive a fastener.

1 35. The instrument of claim 27, wherein the proximal end of the holder assembly
2 includes at least one slot sized and configured to receive a portion of the actuating member.

1 36. The instrument of claim 35, wherein the release assembly further includes a
2 proximal end having a first pair of slots sized and configured to receive a portion of the
3 actuating member.

1 37. The instrument of claim 36, wherein the proximal end of the release assembly
2 further includes a second pair of slots sized and configured to correspond with the slots
3 formed on the holder assembly when the release assembly is inserted into the holder
4 assembly.

1 38. The instrument of claim 36, wherein the actuating assembly further includes a
2 first tip and a second tip each sized and configured to snap onto and engage the slots formed
3 in the holder and release assemblies, respectively.

1 39. The instrument of claim 27, wherein the release assembly includes a proximal
2 end having a slot sized and configured to mate with a pin in the proximal end of the holder
3 assembly to facilitate proper alignment of the release assembly within the holder assembly.

1 40. The instrument of claim 27, wherein the actuating member is a hand grip, the
2 hand grip having a first grip member, a second grip member, a first jaw member, and a
3 second jaw member, the first grip member pivotally coupled to the second grip member, and
4 the first and second jaw members are operatively associated with the holder and release
5 assemblies, respectively.

1 41. The instrument of claim 40, wherein the first grip member is pivotally coupled
2 to the first jaw member and the second grip member is pivotally coupled to the second jaw
3 member.

1 42. The instrument of claim 41, wherein the first grip member further includes a
2 pin slidably movable in a slot formed in the second jaw member and the second grip member
3 includes a pin slidably movable in a slot formed in the first jaw member to maintain the jaw
4 members in parallel alignment when the instrument is actuated.

1 43. The instrument of claim 42, wherein the first and second jaw members further
2 include a tip sized and configured to snap onto and engage corresponding slots formed in the
3 holder and release assemblies.

1 44. The instrument of claim 43, wherein when the hand grip snaps onto the holder
2 assembly and the release assembly, the hand grip is orientated substantially perpendicular to
3 the longitudinal axes of the holder and release assemblies.

1 45. The instrument of claim 27, wherein the longitudinal spinal member is a
2 longitudinal spinal rod and the spinal implant comprises:
3 a body having a channel for receiving the spinal rod;
4 an anchor member associated with the body, and
5 a fastener for securing the spinal rod to the body and for fixing the angular position of
6 the anchor member with respect to the body.

1 46. The instrument of claim 45, wherein the body is a generally cylindrical
2 member having an upper portion incorporating the channel, and a lower portion defining a
3 recess, the anchor member further including a curvate head that is shaped and dimensioned to
4 fit within the recess for facilitating polyaxial movement of the body with respect to the
5 anchor member.

1 47. The instrument of claim 46, wherein the lower portion of the body
2 surrounding the recess is at least partially compressible to allow the body to be snapped over
3 the curvate head.

1 48. The instrument of claim 47, wherein the spinal implant further includes a
2 collar slidably disposed around the lower portion of the body, the collar having an inner
3 surface that interacts with an exterior surface of the lower portion of the body to compress the
4 recess around the curvate head when the collar is pressed downward with respect to the body.

1 49. The instrument of claim 48, wherein the fastener is a set screw sized and
2 configured to engage internal threads formed on an inside surface of the upper portion of the
3 body member such that tightening the fastener onto the body moves the fastener against the
4 spinal rod when the rod is located in the channel and urges the spinal rod against the collar
5 causing the collar to move downward along the exterior surface of the lower portion of the
6 body thereby contracting the recess around the curvate head of the anchor member, locking
7 the angular position of the anchor member with respect to the body.

1 50. The instrument of claim 49, wherein the fingers are sized and configured to
2 allow an axial upward force to be applied to the locking collar.

1 51. A surgical instrument for urging a longitudinal spinal member into a top-
2 loading spinal implant, the instrument comprising:
3 a holder assembly having a proximal end and a distal end;
4 a release assembly having a proximal end and a distal end; and
5 a hand grip having a first tip and a second tip sized and configured to snap onto and
6 engage the proximal end of the holder and release assemblies, respectively, so that actuation
7 of the hand grip moves the holder assembly with respect to the release assembly.

1 52. The instrument of claim 51, wherein the proximal end of the holder assembly
2 includes at least one slot sized and configured to receive a portion of the hand grip.

1 53. The instrument of claim 52, wherein the proximal end of the release assembly
2 further includes a first pair of slots sized and configured to receive a portion of the hand grip.

1 54. The instrument of claim 53, wherein the proximal end of the release assembly
2 further includes a second pair of slots sized and configured to correspond with the slots
3 formed on the holder assembly when the release assembly is inserted into the holder
4 assembly.

1 55. The instrument of claim 51, wherein the release assembly comprises a tubular
2 member and a pusher member, the tubular member is sized and configured to be slidably
3 disposed within the holder assembly, and the pusher member is sized and configured to
4 slidably surround at least a portion of the holder assembly.

1 56. The instrument of claim 55, wherein the distal end of the tubular member
2 includes at least one hole and the pusher member includes at least one aperture, the at least
3 one hole and the at least one aperture being sized and configured to receive at least one pin
4 for securing the pusher member to the tubular member.

1 57. The instrument of claim 55, wherein the pusher member includes a proximal
2 section and a distal section disposed along a longitudinal axis of the pusher member, the
3 member having an opening sized and configured to receive the holder assembly coaxially
4 therein.

1 58. The instrument of claim 51, wherein the distal end of the holder assembly
2 further includes a pair of U-shaped recesses configured to correspond with at least one recess
3 formed in the release assembly so that the spinal rod may extend completely through the
4 holder assembly and the release assembly.

1 59. The instrument of claim 51, wherein the distal end of the holder assembly
2 includes a pair of fingers for engaging the spinal implant, and the distal end of the release
3 assembly includes a recess for engaging the longitudinal spinal member so that movement of
4 the holder assembly with respect to the release assembly urges the spinal member into
5 engagement with the spinal implant.

1 60. The instrument of claim 59, wherein the fingers have a first position in which
2 the spinal implant is freely received therebetween, and a second position in which the fingers
3 contact an underside of an edge of the spinal implant to retain the implant in at least a first
4 axial direction, wherein the fingers are adjustably moveable from the first position to the
5 second position.

1 61. The instrument of claim 59, wherein the hand grip is moveable between a rest
2 position and an actuated position, the fingers being biased apart in the rest position and are
3 sized and configured to contact an underside of an edge of the spinal implant in the actuated
4 position.

1 62. The instrument of claim 59, wherein the release assembly has an interior
2 surface and the fingers have an exterior surface configured to engage the interior surface of
3 the release assembly so that movement of the holder assembly with respect to the release
4 assembly moves the fingers from a first position in which the fingers are separated by a first
5 separation distance to a second position in which the fingers are separated by a second
6 separation distance, the second separation distance being less than the first separation
7 distance.

1 63. The instrument of claim 62, wherein the fingers are sized and configured so
2 that when in the second position, the fingers engage an underside of an edge of the spinal
3 implant.

1 64. The instrument of claim 51, wherein the release assembly further includes a
2 central bore extending from the proximal end to the distal end of the assembly, the central
3 bore being sized and configured to receive a fastener.

1 65. The instrument of claim 51, wherein the proximal end of the release assembly
2 includes a slot sized and configured to mate with a pin in the proximal end of the holder
3 assembly to facilitate proper alignment of the release assembly within the holder assembly.

1 66. The instrument of claim 51, wherein the hand grip includes a first grip
2 member, a second grip member, a first jaw member, and a second jaw member, the first grip
3 member pivotally coupled to the second grip member, and the first and second jaw members
4 are operatively associated with the holder and release assemblies, respectively.

1 67. The instrument of claim 66, wherein the first grip member is pivotally coupled
2 to the first jaw member and the second grip member is pivotally coupled to the second jaw
3 member.

1 68. The instrument of claim 67, wherein the first grip member further includes a
2 pin slidably movable in a slot formed in the second jaw member and the second grip member
3 includes a pin slidably movable in a slot formed in the first jaw member to maintain the jaw
4 members in parallel alignment when the instrument is actuated.

1 69. The instrument of claim 68, wherein the first and second jaw members further
2 include a tip sized and configured to snap onto and engage corresponding slots formed in the
3 holder and release assemblies.

1 70. The instrument of claim 69, wherein when the hand grip snaps onto the holder
2 and release assemblies, the hand grip is orientated substantially perpendicular to the
3 longitudinal axes of the holder and release assemblies.

1 71. The instrument of claim 51, wherein the longitudinal spinal member is a
2 longitudinal spinal rod and the spinal implant comprises:
3 a body having a channel for receiving the spinal rod;
4 an anchor member associated with the body, and
5 a fastener for securing the spinal rod to the body and for fixing the angular position of
6 the anchor member with respect to the body.

1 72. The instrument of claim 71, wherein the body is a generally cylindrical
2 member having an upper portion incorporating the channel, and a lower portion defining a
3 recess, the anchor member further including a curvate head that is shaped and dimensioned to
4 fit within the recess for facilitating polyaxial movement of the body with respect to the
5 anchor member.

1 73. The instrument of claim 72, wherein the lower portion of the body
2 surrounding the recess is at least partially compressible to allow the body to be snapped over
3 the curvate head.

1 74. The instrument of claim 73, wherein the spinal implant further includes a
2 collar slidably disposed around the lower portion of the body, the collar having an inner
3 surface that interacts with an exterior surface of the lower portion of the body to compress the
4 recess around the curvate head when the collar is pressed downward with respect to the body.

1 75. The instrument of claim 74, wherein the fastener is a set screw sized and
2 configured to engage internal threads formed on an inside surface of the upper portion of the
3 body member such that tightening the fastener onto the body moves the fastener against the
4 spinal rod when the rod is located in the channel and urges the spinal rod against the collar
5 causing the collar to move downward along the exterior surface of the lower portion of the
6 body thereby contracting the recess around the curvate head of the anchor member, locking
7 the angular position of the anchor member with respect to the body.

1 76. The instrument of claim 75, wherein the holder assembly includes a pair of
2 fingers at a distal end thereof, the fingers being sized and configured to allow an axial upward
3 force to be applied to the locking collar.